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A system and a method for obtaining digital photographs.

The present invention relates to digital photography.

5 Digital photographs are generally taken using a digital camera with an optical lens behind which is a digital sensor, for example a matrix of CCD cells which convert light received by the sensor into a digital electronic signal. The output of the sensor is connected to
10 storage means, for example a PCMCIA card. The storage means can be downloaded by means of a reader which transfers the digital information stored in the memory to the hard disk of a microcomputer. The pictures can then be retouched and printed on paper using a colour printer.

15 An object of the present invention is to propose a system for obtaining digital photographs that can be used by a non-professional user with no previous training.

An object of the invention is to propose a system for obtaining digital photographs able to provide digital
20 photographs printed on paper in a very short time and at the location where the photographs were taken or in its immediate vicinity.

The system in accordance with the invention for obtaining digital photographs includes a digital camera
25 with a PCMCIA card and an interactive terminal. The interactive terminal includes means for reading and erasing the PCMCIA card of a digital camera, means for printing photographs, means for immediately displaying photographs taken by means of the digital camera and downloaded from
30 its PCMCIA card, and means for commanding the printing of a displayed photograph. The display means and the command means consist of a touch screen on which is displayed a first image comprising a series of photographs, a command to display another series of photographs, and a command to
35 display exclusively one photograph from the series

displayed. The exclusive display command provides access to a second image on which are displayed the selected photograph, a command to print said photograph and a command to return to the first image previously displayed.

5 In one embodiment of the invention, the photographs are scrolled continuously at predetermined time intervals.

 The display command advantageously provides access to one or more third images on which are shown series identifier numbers identifying a command to display the
10 required series, display of which has been commanded.

 In one embodiment of the invention, the display command takes the form of a circular sensor area displaying an identifier number of the series currently being displayed.

15 In one embodiment of the invention, the exclusive display command is the photograph selected for display itself.

 A reference number is advantageously allocated to each photograph, displayed on the screen and printed when
20 the photograph is printed.

 In one embodiment of the invention, the first screen includes a command to delete photographs taking the form of an undifferentiated top lateral area providing access to a command to confirm deletion formed by the
25 photograph selected to be deleted itself.

 In one embodiment of the invention, after a photograph is deleted the remaining photographs are shifted to complete the series from which one photograph has been deleted.

30 In one embodiment of the invention the system includes payment means associated with the printing means.

 The interactive terminal can include means for writing a CD-ROM.

 The system can include a command to print contact
35 sheets combining a plurality of photographs in a smaller

format.

The present invention also provides a method of obtaining digital photographs from a digital camera with a PCMCIA card, in which method the content of the PCMCIA card is read and then stored in an interactive terminal, the content of the PCMCIA card is then deleted, photographs stored in this way in the terminal are displayed on a touch screen, a photograph is printed at the command of a user of the terminal, commands being executed by means of the touch screen on which is displayed a first image including a series of photographs, a command to display another series of photographs, and a command to display exclusively one photograph from the series displayed, the exclusive display command providing access to a second image in which are displayed the selected photograph, a command to print said photograph and a command to return to the first image previously displayed.

In one embodiment, the display control method provides access to one or more third images on which are displayed identification numbers of the series forming a command to display the required series.

In one embodiment, the exclusive display command is the photograph selected to be displayed itself.

A multimedia application can be launched at variable intervals.

As an alternative to this, the command to return to the first image provides access to a first image including the next series of photographs and not the series of photographs previously displayed.

Thus digital photographs can be taken using a digital camera where an event, a meeting or a show takes place, the files containing the data relating to the digital photographs transferred into the memory of an interactive terminal, displayed on a screen, selected and printed out on paper. The steps of display on a screen and

printing on paper are very easy for an inexperienced user to carry out without prior training. Taking photographs by means of the digital camera and transferring the files to the interactive terminal are also easy for an inexperienced user. The compact interactive terminal is of course made sufficiently light to be movable easily and includes rolling means such as wheels.

The present invention will be understood better after reading the following detailed description of one embodiment of the invention given by way of non-limiting example only and referring to the accompanying drawings, in which:

figure 1 is a diagrammatic perspective view of an interactive terminal according to the invention;

figure 2 is a diagrammatic view of a screen on which a first image is displayed;

figure 3 is a diagrammatic view of a screen on which a deletion confirmation command image is displayed;

figure 4 is a diagrammatic view of a screen on which a second image is displayed;

figure 5 is a diagrammatic view on a screen on which a third image is displayed;

figure 6 is a diagrammatic view of a screen on which interactive terminal commands are displayed; and

figure 7 is a diagrammatic view of a screen on which interactive terminal parameter setting commands are displayed.

As can be seen in figure 1, the interactive terminal 1 includes a frame 2 mounted on castors, not shown, so that it can be moved easily. The frame 2 has a front face 3, two side faces, of which one side face 4 can be seen in figure 1, and a rear face that cannot be seen. A display screen 5 is disposed on the front face 3 in the upper part of the frame 2 and is slightly inclined towards the rear. A fixed or mobile cover 6 is disposed over the

screen 5. Payment means such as a coin slot or a bank card or prepaid card reader can be provided.

On the side face 4 of the frame 2 is a hopper 7 to receive printed photographs. The interactive terminal incorporates a microcomputer including computing means, for example a PENTIUM II[®] microprocessor, and storage means, for example a hard disk drive. A colour printer is integrated into the interactive terminal 1 and is connected to the computer and the storage means. The printer can be of the thermal sublimation type. It is fitted with rolls of paper and rolls of inking film to produce photographs to the A6, A7, 13x18, 10x12 or postcard format, according to the inking film roll type. The printed photos leave the interactive terminal 1 via a slot 8 and drop into the hopper 7. On the side face opposite the side face 4 the interface terminal 1 has a PCMCIA card reader adapted to read a card from a digital camera and erase it after reading it.

A series of photographs is taken using a standard digital camera. The card from the camera is downloaded into the interactive terminal 1 and the photographs are viewed and selected on the screen 5. Printing is commanded and the printed photographs are recovered from the hopper 7.

The subsequent figures show how the photographs are displayed and how printing is commanded on the screen 5.

In figure 2, a first image 9 is displayed on the screen 5. The first image 9 comprises four frames 10 each of which shows one of the photographs taken by the digital camera and transferred to the hard disk of the interactive terminal via the card reader.

The four rectangular frames 10 are disposed side-by-side in pairs to match the rectangular shape of the screen 5. However, the four frames 10 do not occupy the whole of the surface area of the screen 5. The image 9 has side margins 11 and a bottom margin 12 that are not

occupied by the frames 10. The bottom margin 12 is used to display instructions for using the interactive terminal 1 and includes the following text: "touch a photo to print it" and "touch the bubble to choose a screen". A circle or bubble 13 is displayed at the centre of the image 9, where the four frames 10 intersect; it encroaches slightly on one corner of each frame 10 and a number is displayed at its centre, here the number 1.

The screen 5 is a touch screen, which means that touching a given area of the screen 5 is detected and this information can be transferred to the computing means of the interactive terminal 1 to constitute a command. As indicated by the text displayed in the bottom margin 12, touching the photograph in one of the frames 10 constitutes a print command, the first effect of which is to display the touched photograph in a full screen format, as shown in figure 4. Touching the central bubble 13 commands the display of another series of photographs by changing to the image shown in figure 5.

The lateral areas 11 of the image 9 carry no particular information and can constitute a background intended to emphasise the photographs displayed in the frames 10. However, the lateral areas 11 can constitute command areas relating to the photographs displayed in the frames 10 or to the bubble 13. A localised invisible area of the image 9 corresponds to a small portion of one of the lateral areas 11 to form a command for access to the image shown in figure 3, for deleting some of the photographs. To make access to the deletion command more secure, either the same command area in the lateral area 11 must be touched twice in succession or two contact areas in two different command areas in the lateral areas 11 must be touched in succession. Another portion of the lateral area 11 can serve as a command to access the figure 6 image. Sending data over a network can also be commanded in a similar way.

The image 14 shown in figure 3 also comprises four frames 10 smaller than the image 9 in figure 2 and displaying the same photographs. The image 14 also includes a frame 15 under the frames 10 and carrying the following text: "confirm deletion", beneath which are displayed two bubbles 16 and 17, the bubble 16 carrying the text "yes" and the bubble 17 carrying the text "no". In the image 14, the deletion of a photograph displayed in one of the frames 10 is commanded by placing the finger each photograph to be deleted, whereupon the photograph disappears from its frame 10. The delete command must be confirmed or cancelled by touching the bubble 16 or 17, respectively. After confirming deletion of one or more photographs from a series of four photographs, a shift is executed to avoid displaying an empty frame 10. A photograph is deleted by transferring the file relating to that photograph to a recycle folder where the file remains until final deletion or restoration, the photograph no longer being displayed on the image 9.

This step of selecting photographs is generally performed by the person who took the photographs and is used to eliminate less interesting photographs which suffer from framing, exposure and other errors.

After deleting one or more photographs, the user is returned automatically to the image 9 shown in figure 2.

The image 18 shown in figure 3 is that which is displayed on the screen 5 of the interactive terminal 1 in order to print a photograph after the user has touched one of the frames 10 of the screen 9 shown in figure 2.

The image 18 includes a large rectangular frame 19 substantially corresponding to the combination of the four frames 10, see figure 2.

The photograph selected for printing is shown in the frame 19.

A small rectangular frame 20 is displayed centrally

at the bottom of the image 18, overlaid on the photograph displayed in the frame 19 and carrying the following text: "print ?", and including two command bubbles, a bubble 21 carrying the legend "yes" and a bubble 22 carrying the legend "no". The user can therefore observe the photograph in the large frame 19, to verify its quality and interest. Finally, the print command is confirmed or cancelled by touching the bubble 21 or the bubble 22, respectively. Confirming printing causes the selected photograph to be printed and fed into the hopper 7 shown in figure 1 and returns to the screen 9 shown in figure 2, showing the same photographs so that another copy of the same photograph can be printed or one of the other photographs can be printed.

The print command can instead return to the screen 9 displaying the photographs of the next series of four photographs.

The image 23 shown in figure 5 is accessed by touching the bubble 13 shown in figure 2. The image 23 includes a large rectangular frame 24 occupying the centre and the top of the image 23 and leaving lateral areas 25 and 26 and a bottom area 27. Several bubbles 13 disposed in rows and columns, for example in five rows and seven columns, and numbered successively are displayed in the frame 24. The number carried by each bubble 13 corresponds to that which is displayed in the bubble 13 shown in figure 2 and corresponds to a series of four photos displayed in the frames 10.

Accordingly, and as indicated by the text displayed in the bottom area 27, touching a bubble 13, for example that carrying the number 55, displays an image 9 including the 55th series of four photographs. The user can therefore access very quickly a series of photographs of particular interest. The image 23 displays the identification numbers of the series of photographs and incorporates a command for displaying the required series. The lateral area 25 carries

the legend "previous screen". The area of this legend forms a touch-sensitive command area for displaying other series of photographs, for example those numbered 1 to 21.

5 There is no legend in the lateral area 26. However it can feature the legend "next screen" and thereby constitute a command area for displaying higher numbers, for example 57 to 91, in the bubbles 13 of the frame 24.

10 Figure 6 shows the image 28 which provides access to commands intended for the professional user, before the interactive terminal is made available to the public. The bubbles entitled "multimedia 1" and "multimedia 2" display on the screen 5 other images corresponding to multimedia applications such as advertising screens, information relating to the interactive terminal, the organiser of the
15 festivities, the congress or exhibition in which the interactive terminal is used, with a frequency that can be varied, for example very five series of four photographs. The display of a first image like that shown in figure 2 and comprising the series of first photographs is
20 sequenced. For example, a new photograph can be displayed every five seconds, so that a photograph remains visible for 20 seconds as the photographs are loaded one after the other. In this way a multimedia application can be displayed after a predetermined period of displaying
25 photographs.

30 The "update" bubble transfers and files the last photographs from the PCMCIA card of the camera immediately after the series of photographs currently being displayed in the active folder without waiting for a test to detect the presence of a PCMCIA card in the reader. Either the
35 last photographs can be displayed without waiting in an image 9, after which the normal sequence of the photographs whose display had been interrupted is resumed, or the photographs are displayed without interrupting the normal sequence, the last photographs being displayed after

previous photographs.

5 The "parameter" bubble provides access to the parameter setting screen shown in figure 7. The "index" bubble prints indexing pages, for example contact sheets corresponding to the series of photographs previously displayed, the reference number of each photograph being printed near each photograph on a contact sheet. After printing contact sheets of photographs previously displayed, the terminal prompts the user to print contact
10 sheets of deleted photographs in the recycle folder whose reference can be that of the main folder with additional letters such as "Old" or "Del".

15 The "cancel" bubble returns to the display of the image 9 previously displayed. The "quit" bubble stops the operation of the interactive terminal.

20 The image 30 displayed on the screen 5 and shown in figure 7 enables a professional user of the interactive terminal to carry out a number of adjustments. All the files of photographs taken for a given event form a folder to which a reference number is assigned, as displayed in the frame 31. Here the reference number is "C249". The hard disk can therefore store photographs taken on diverse occasions, which can be recovered easily. The "empty" bubble 32 is a touch-sensitive command area for deleting
25 all the photographs from a main folder and the associated recycle folder, only the number of the folder displayed in the frame 31 remaining. This deletes the image files of the photographs.

30 Uppercase letters are displayed under the frame 31 for naming a new folder. Each letter constitutes a touch-sensitive command area and touching it causes it to be displayed in the frame 31. The reference of a folder is formed by a letter chosen by the user and displayed on the screen, to which is added a three-digit number that is
35 generated automatically, for example the number of the day

within the calendar year. Because twelve letters are displayed under the frame 31, twelve new folders can be created in a day. If necessary a greater number of letters can be displayed and/or a reference made up of two letters and three digits can be used. The bubble 33 constitutes a touch-sensitive control for opening an existing folder. The bubble 34 constitutes a touch-sensitive control for confirming the name of a new folder.

The reference number 35 designates a cursor, graduated from 0 to 10, for example, which is moved by placing the finger on the location where the corresponding number is to be displayed. The cursor 35 constitutes a touch-sensitive command area for choosing the frequency of running a multimedia application during the timed sequence of photographs in the image 9. There are two touch-sensitive command areas above the cursor 35, one marked "inactivate" whereby the multimedia application is put onto the screen after a fixed time period of non-use of the terminal, i.e. of no contact with the touch screen 5, a counter being activated as soon as an image 9 is displayed and reset to zero on each contact with the screen 5, and the other marked "every ..." for activating said application, after which the cursor must be set to the chosen location. The multimedia application is put onto the screen after the chosen time period for display of an image 9, the periods in which other images, for example 14, 18, 23 or 28, are displayed being ignored, i.e. interrupting the count but not resetting it to zero.

Under the cursor 35 is a cursor 36 marked "PCMCIA delay" which is used to vary the time for downloading the card from the digital camera to the hard disk drive of the interactive terminal to suit the type of card in the camera. It is optional.

A "photo text" frame 37 is used to choose text that is systematically printed at the bottom of a photograph. An

"index text" frame 38 is used to choose text that is systematically printed with the contact sheets. Finally, the bubble 39 is a touch-sensitive "cancel" command area for returning to the image 9 shown in figure 2.

5 To facilitate use of the interactive terminal the photographs are placed in a given folder in chronological order. The interactive terminal displays the new photos downloaded from the card of a digital camera so that the professional or amateur photographer can select them and
10 delete defective photographs. This avoids subsequent modification of the screen numbers and makes it easier for amateurs to identify photographs that interest them.

In one embodiment of the invention, the interactive terminal can include integral payment means such as a bank
15 card or prepaid card reader or a coin slot.

At regular intervals the microprocessor of the interactive terminal commands testing of the PCMCIA card reading means. If no card is present in the reader, the test is resumed at the end of said interval. If a card is
20 present in the reader, the card is read, the image file is transferred to the hard disk drive of the interactive terminal, and finally the card is erased, so that a new series of photographs can be taken using the digital camera.

25 A common reference file includes an identifier of the PCMCIA card reader port, an identifier of the hard disk drive port, the name of the folder, the waiting time between two tests on the reader, an incrementing variable, the number of images in the folder and the time-delay set
30 by the cursor 35. A text file is provided for storing the texts displayed in the frames 37 and 38.

The display of a first image as shown in figure 2 is effected in the following manner. The photographs contained in the folder are displayed one by one. When the
35 last available photograph has been displayed, the display

resumes at the beginning. When four series of photographs, i.e. 4 x 4 photographs, have been displayed, the quantity of photographs available in the folder is compared with the number in memory. If there is no difference the display is resumed, as it indicates that no new photograph has been transferred from the reader to the hard disk drive. Otherwise the additional images are renamed chronologically and display is resumed.

The invention provides a mobile and interactive system for obtaining digital photographs which can be made available to amateur users in a public or private place and which is self-contained, requiring only a standard electrical power supply or a storage battery. The intervention of the professional photographer is minimised because the printing of photographs is commanded by the amateur user. The amateur user can even take photographs and download them into the terminal, for example in a theme park, in which case the user can view only their own photographs, in particular by entering a personal identification number or after the PCMCIA card in their camera has been recognised. This reduces the labour needed to make photographs available, which enables a substantial saving and provides excellent user friendliness, even in the case of persons using the interactive terminal for the first time.